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| **Instructions** | | **Actual key strokes on Calculator** | |
| 1. Open the Program Editor for a new program. | | [PRGM] [◄] [ENTER] | |
| 1. Enter a name for the new program, such as QUADRAT. | | You’re already in alpha mode. Use the little green letters, and press [ENTER] when finished. | |
| 1. optional: Any good program should give some idea what it’s doing. This one-line comment should be instantly recognizable to anyone who has studied quadratic equations. The line you are creating is       Disp "AX²+BX+C=0"  However, if you want to leave out this documentation step the program will still run. | | For Disp, press [PRGM] [►] [3].    Press [ALPHA + *makes* "].    Press [ALPHA MATH *makes* A] [x,T,θ,n] [x²] [+].    Press [ALPHA APPS *makes* B] [x,T,θ,n] [+].    Press [ALPHA PRGM *makes* C].    For the = sign, press [2nd MATH *makes* TEST] [1], then finish the command with [0] [ALPHA + *makes* "] [ENTER]. Notice that the command wraps automatically to the next line. | |
| 1. Now program the instructions to ask for the coefficients A, B, and C. Disp and Prompt instructions coded | | For Prompt, press [PRGM] [►] [2].    Press [ALPHA MATH *makes* A] [,] [ALPHA APPS *makes* B] [,] [ALPHA PRGM *makes* C] [ENTER]. | |
| 1. Start with the discriminant B²−4AC, which determines whether the roots are real. To save typing later, you will compute it and store it in a new variable, D. | | [ALPHA APPS *makes* B] [x²] [−] [4] [ALPHA MATH *makes* A] [ALPHA PRGM *makes* C] [STO→] [ALPHA x-1 *makes* D] [ENTER]  Disp, Prompt, Discriminant | |
| 1. Now compute and display the two roots.  The first root is (−B+√(D))/(2A). Be sure to use the change-sign key [(-)] and not the minus key [−]! | | [PRGM] [►] [3] [(] [(-)] [ALPHA APPS *makes* B] [+] [2nd x² *makes* √] [ALPHA x-1 *makes* D] [)] [)] [÷] [(] [2] [ALPHA MATH *makes* A] [)] [ENTER] | |
| 1. The second root is nearly the same, (-B−√(D))/(2A). Be sure to use the change-sign key [(-)] for the first “-” and the minus key [−] for the second! | | [PRGM] [►] [3] [(] [(-)] [ALPHA APPS *makes* B] [−] [2nd x² *makes* √] [ALPHA x-1 *makes* D] [)] [)] [÷] [(] [2] [ALPHA MATH *makes* A] [)] [ENTER] | |
| newly-entered computations of roots | | The screen should look like this! BE CAREFUL WITH THE NEGATIVES, POSITIVES, SUBTRACTION and ADDITION SIGNS!  TO INSERT SOMETHING: Remember you can use [2nd DEL *makes* INS] to insert characters so that you don’t have to retype a whole line. | |
| 1. optional: Delete the created variables. Though they don’t take up much space, if left in memory they’ll surprise you on the memory-management screen. DelVar commands | | The DelVar command is on the PRGM menu.  [PRGM] [ALPHA TAN *makes* G] [ALPHA MATH *makes* A] [ENTER]  [PRGM] [ALPHA TAN *makes* G] [ALPHA APPS *makes* B] [ENTER]  [PRGM] [ALPHA TAN *makes* G] [ALPHA PRGM *makes* C] [ENTER]  [PRGM] [ALPHA TAN *makes* G] [ALPHA x-1 *makes* D] [ENTER]    Leave the program editor by pressing [2nd MODE *makes* QUIT]. | |
| The program will look like:  Disp "AX²+BX+C=0"  Prompt A,B,C  B²-4AC→D  Disp (-B+√(D))/(2A)  Disp (-B−√(D))/(2A)  DelVar A  DelVar B  DelVar C  DelVar D | Important information on COMPLEX ROOTS (i)  If you get the message “NONREAL ANS” when running the program, it means your equation has no real roots but your calculator is in real-only mode. Select 1:Quit. You can set up your calculator to view non-real roots, as follows:  TI-83/84 MODE screen, error message NONREAL ANS | You want to select a+b*i* mode.  TI-83/84 MODE screen, a+bi selected  When you are using this program, you want to use this mode. When you are NOT using this program, you want to change this mode back to REAL. | Press [MODE] [▼ 6 times] [►] [ENTER].    Return to the home screen with [2nd MODE *makes* QUIT].  <http://www.tc3.edu/instruct/sbrown/ti83/>  quadrat.htm#Enter |